



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

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D119-796-241TRN
Job Sheet 201872



Part No: D119-796-241TRN

Job Qty: 1 pcs

Part Name: Crosstube Turning Detail



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 10/16/19

Job Tracking No:

Due Date: 10/30/19

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG RD119-796 REV.K IPP REV A RQ 14/05/27 VERIFIED BY DD IPP REV:B 16.05.04 AS PER DWG REV.I DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
100	Mori Seiki TL-40 - 1	1 pcs		10/30/19	1.00	1.72	Mori Seiki TL-40 - 1		DAS 66 2019/10/20 9-89
110	QC 2	1 pcs		10/30/19	0.00	0.00	QC 2 - 1		
							QC 2 - 12		
							QC 2 - 14		
							QC 2 - 17		
							QC 2 - 19		
							QC 2 - 2		
							QC 2 - 20		
							QC 2 - 22		
							QC 2 - 23		
							QC 2 - 25		
							QC 2 - 32		
							QC 2 - 33		
							QC 2 - 35		
							QC 2 - 39		
							QC 2 - 4		
							QC 2 - 40		
							QC 2 - 44		
							QC 2 - 45		
							QC 2 - 48		
							QC 2 - 49		
							QC 2 - 50		
							QC 2 - 51		
							QC 2 - 52		
							QC 2 - 57		
							QC 2 - 62		
							QC 2 - 63		
							QC 2 - 8		
							QC 2 - 66		DAS 66 2019/10/20 9-89
							QC 2 - 64		

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				QC 2 - 65	
				QC 2 - 5	
				QC 2 - 71	
				QC 2 - 73	
				QC 2 - 69	
120	Mori Seiki TL-40 - 1 - B4B	1	10/30/19	1.00 1.72	Mori Seiki TL-40 - 1 - B4B
		pcs			
130	QC 2	1	10/30/19	0.00 0.00	QC 2 - 1
		pcs			
				QC 2 - 12	
				QC 2 - 14	
				QC 2 - 17	
				QC 2 - 19	
				QC 2 - 2	
				QC 2 - 20	
				QC 2 - 22	
				QC 2 - 23	
				QC 2 - 25	
				QC 2 - 32	
				QC 2 - 33	
				QC 2 - 35	
				QC 2 - 39	
				QC 2 - 4	
				QC 2 - 40	
				QC 2 - 44	
				QC 2 - 45	
				QC 2 - 48	
				QC 2 - 49	
				QC 2 - 50	
				QC 2 - 51	
				QC 2 - 52	
				QC 2 - 57	
				QC 2 - 62	
				QC 2 - 63	
				QC 2 - 8	
				QC 2 - 66	
				QC 2 - 64	
				QC 2 - 65	
				QC 2 - 5	
				QC 2 - 71	
				QC 2 - 73	
				QC 2 - 69	
140	QC 8	1	10/30/19	0.00 0.00	QC 8 - 12
		pcs			
				QC 8 - 14	
				QC 8 - 17	
				QC 8 - 20	
				QC 8 - 25	
				QC 8 - 3	
				QC 8 - 32	
				QC 8 - 33	
				QC 8 - 35	
				QC 8 - 39	
				QC 8 - 4	
				QC 8 - 44	
				QC 8 - 45	
				QC 8 - 49	
				QC 8 - 58	
				QC 8 - 8	
				QC 8 - 9	
				QC 8 - 68	

DAS
66
9-89

10/22/2019

DAS
66
9-89

10/22/2019

					QC 8 - 67		
					QC 8 - 1 (A)		
					QC 8 - 47		
					QC 8 - 40		
					QC 8 - 52		
					QC 8 - 23		
					QC 8 - 57		
					QC 8 - 76	DAS 76 9-89	
					QC 8 - 61		
145 Crosstubes - 2 - B4B	1 pcs	10/30/19	0.00	0.45	Crosstubes - 1 - B4B		
					Crosstubes - 2 - B4B	BB 11/22/2019	
					Crosstubes - 3 - B4B		
					Crosstubes - 4 - B4B		
150 Handfinish - 1-1 Chemical-B4B	1 pcs	10/30/19	0.00	0.40	Handfinish - 1 - 1 - B4B		
					Handfinish - 1 - 2 - B4B		
					Handfinish - 1 - 3 - B4B	NOV 27 2019	
					Handfinish - 1 - 4 - B4B		
					Handfinish - 1 - 5 - B4B		
					Handfinish - 1 - 6 - B4B		
					Handfinish - 1 - 7 - B4B		
					Handfinish - 1 - 8 - B4B		
					Handfinish - 1 - 9 - B4B		
					Handfinish - 1 - 10 - B4B		
					Handfinish - 1 - 11 - B4B		
					Handfinish - 1 - 12 - B4B		
					Handfinish - 1 - 13 - B4B		
					Handfinish - 1 - 14 - B4B		
					Handfinish - 1 - 15 - B4B		
					Handfinish - 1 - 16 - B4B		
					Handfinish - 1 - 17 - B4B		
					Handfinish - 1 - 18 - B4B		
					Handfinish - 1 - 19 - B4B		
					Handfinish - 1 - 20 - B4B		
					Handfinish - 1 - 21 - B4B		
					Handfinish - 1 - 22 - B4B		
					160 QC 7	1 pcs	10/30/19
QC 7 - 13							
QC 7 - 14							
QC 7 - 15							
QC 7 - 17							
QC 7 - 18							
QC 7 - 19							
QC 7 - 2							
QC 7 - 28							
QC 7 - 3							
QC 7 - 30							
QC 7 - 34							
QC 7 - 36							

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B3 11/22/2019

NOV 27 2019

					QC 7 - 37	
					QC 7 - 41	
					QC 7 - 47	
					QC 7 - 48	
					QC 7 - 51	
					QC 7 - 58	
					QC 7 - 59	
					QC 7 - 60	
					QC 7 - 9	
					QC 7 - 68	
					QC 7 - 50	
					QC 7 - 67	
					QC 7 - 40	
					QC 7 - 24	
					QC 7 - 43	DAS
					QC 7 - 61	76
					QC 7 - 81	9-89
					QC 7 - 76	
					QC 7 - 79	
170	Packaging 3-1 - Stock - B4B	1	10/30/19	0.00 0.00	Packaging 3 - 1 - B4B	
	pcs				Packaging 3 - 2 - B4B	
					Packaging 3 - 3 - B4B	
					Packaging 3 - 4 - B4B	
					Packaging 3 - 5 - B4B	
					Packaging 3 - 6 - B4B	
					Packaging 3 - 7 - B4B	
					Packaging 3 - 8 - B4B	
					Packaging 3 - 9 - B4B	
					Packaging 3 - 10 - B4B	
					Packaging 3 - 11 - B4B	
					Packaging 3 - 12 - B4B	
					Packaging 3 - 13 - B4B	
					Packaging 3 - 14 - B4B	
					Packaging 3 - 15 - B4B	
					Packaging 3 - 16 - B4B	
					Packaging 3 - 17 - B4B	
					Packaging 3 - 18 - B4B	
					Packaging 3 - 19 - B4B	
					Packaging 3 - 20 - B4B	
					Packaging 3 - 21 - B4B	
					Packaging 3 - 22 - B4B	
					Packaging 3 - 23 - B4B	
					Packaging 3 - 24 - B4B	B4B 11/29/2019
					Packaging 3 - 25 - B4B	
					Packaging 3 - 26 - B4B	
					Packaging 3 - 27 - B4B	
					Packaging 3 - 28 - B4B	
					Packaging 3 - 29 - B4B	
					Packaging 3 - 30 - B4B	
					Packaging 3 - 31 - B4B	
					Packaging 3 - 32 - B4B	
					Packaging 3 - 33 - B4B	
					Packaging 3 - 34 - B4B	
					Packaging 3 - 35 - B4B	
					Packaging 3 - 36 - B4B	
180	QC 21 - FG	1	10/30/19	0.00 0.00	QC 21 - FG - 21	DAS
	pcs				QC 21 - FG - 70	21
					QC 21 - FG - 53	9-89

NOV 29 2019

Part Op 100 - 1-Fill tube with sand & install plugs on both ends as per Folio FB298 2-Turn first side as per Folio FB298

Descriptions: **110** - (QC2- Inspect parts off machine FAI/FAIB)
120 - 1-Turn second side as per Folio FB298
130 - (QC2- Inspect parts off machine FAI/FAIB)
140 - (QC8- Inspect parts - second check)
145 - GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.
150 - 1- Handfinish X-TUBE INSIDE AND OUT, ALODINE AND ACID ETCH X-TUBE AS PER DWG . USE RED SCOTCH BRITE PAD.
160 - (QC7-Inspect Chemical Conversion Coat)
170 - (Identify as per dwg & Stock Location: _____) LOCATION : LG014
180 - (QC21- Final Inspection - Work Order Release)

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6023-106	Crosstube Material	1 pcs (1 ea)	100-Mori Seiki TL-40 - 1	S013837

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
100-Mori Seiki TL-40 - 1	D6023-106	1	6	0

Part Specifications

Specifications could not be found.



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K84 1K7
CANADA
TEL.: 1 813 632-5200
Email: sales@dartero.com
www.dartaerospace.com

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Container No: S224234



Part: D119-796-241TRN

Job No: 201872

Serial No/Batch: S224234

Revision: K

Inspector:

Exp Date:

Instructions:

Date: 10/20/19

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DART AEROSPACE LTD		Work Order:	701872
Description: Crosstube Assembly (AW119 MKII Aft)		Part Number:	D119-796-241TRN
Inspection Dwg: D119-796-241 Rev: K		Page 1 of 2	

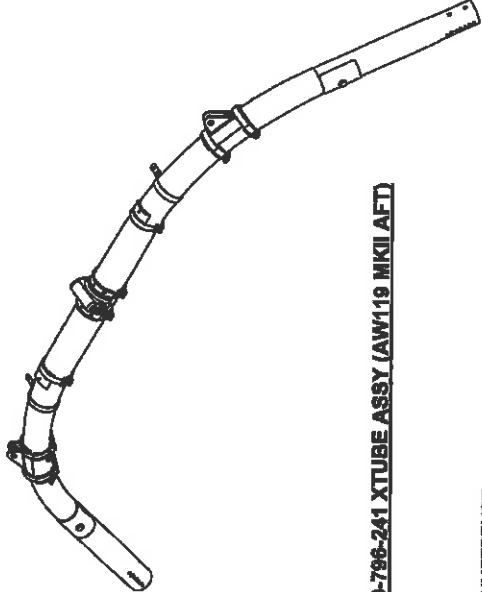
FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	5.88	+/-0.030	5.887	✓		
	2.516	+0.005/-0.000	2.519	✓		CNC-08
	2.626	+0.005/-0.000	2.631	✓		CNC-04
	2.627	+0.005/-0.000	2.632	✓		
	2.798	+0.005/-0.000	2.803	✓		
	2.799	+0.005/-0.000	2.804	✓		
	2.989	+0.005/-0.000	2.994	✓		
	3.191	+0.005/-0.000	3.196	✓		CNC-05
	3.200	+0.005/-0.000	3.205	✓		"
SIDE B	5.88	+/-0.030	5.885	✓		CNC-08
	2.516	+0.005/-0.000	2.520	✓		CNC-04
	2.626	+0.005/-0.000	2.631	✓		
	2.627	+0.005/-0.000	2.632	✓		
	2.798	+0.005/-0.000	2.803	✓		
	2.799	+0.005/-0.000	2.804	✓		
	2.989	+0.005/-0.000	2.993	✓		
	3.191	+0.005/-0.000	3.196	✓		CNC-05
	3.200	+0.005/-0.000	3.206	✓		"
	105.71	+/-0.020	105.70	✓		Tape

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 20181215

19-10-16

D119-798-241 XTUBE ASSY (AW119 MKII AFT)



- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: MASK D5134-041/042 DAMPER SUPPORT ASSEMBLIES, CUFFS, D5136-1/2 CONTACT PADS, THE COMPLETE CIRCUMFERENCE OF THE TUBE UNDER THE D5122-1 CENTER SUPPORT AND THE TAB ON THE D5151-1 GROUNDING CLAMP PRIOR TO APPLICATION OF CLEAR COAT/PAINT.
IF NECESSARY TOUCH UP PRIMER ON OUTSIDE OF CROSSTUBE PER DART QSI 005 4.2.
APPLY MATTE CLEAR COAT TO THE UNDERSIDE OF CROSSTUBE AS SHOWN (B4-2, HATCHED AREA).
MASK THE UNDERSIDE OF CROSSTUBE AS SHOWN (B4-2, HATCHED AREA).
PAINT OUTSIDE PER DART QSI 005 4.2
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-798-241" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
 - 7) WEIGHT: 28.28 lbs
 - 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE.
THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE
 - 9) INSTALL D5122-1 CENTER SUPPORT HAND TIGHT ONLY. DO NOT TORQUE. INSTALL RED TAG TO INDICATE "D5122-1 CENTER SUPPORT MUST BE BONDED PER IN-D119-798 PRIOR TO FLIGHT".
 - 10) PRIOR TO FINISHING, ABRADE MATING SURFACES OF D5138-1/2 AND SURFACE OF CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH 'N' WIPE DEGREASER. APPLY A 0.100" MIN THK LAYER OF PROSEAL 880 ON THE INSIDE CONCAVE SURFACE OF THE D5138-1/2 CONTACT PADS AND INSTALL AT AN 8.4° OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL MS21920-25 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 880 SEALANT HAS CURED FOR 72 HOURS.
TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY. THE NUT HAS NOT BOTTOMED-OUT AFTER TORQUING AND THE NUT IS FACING AFT.
 - 11) PRIOR TO FINISHING, POSITION AND INSTALL D5134-041/042 DAMPER SUPPORTS USING JIG DT10085. ABRADE MATING SURFACES OF THE D5134-041/042 DAMPER SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH 'N' WIPE DEGREASER. APPLY A 0.100" MIN THK LAYER OF PROSEAL 880 ON THE INSIDE CONCAVE SURFACE OF THE D5134-041/042. INSTALL MS21920-28 CLAMPS AND D5123-1 CLAMP CUSHIONS WHILE WET. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 880 SEALANT HAS CURED FOR 72 HOURS. ENSURE THAT THE MS21920 CLAMPS ARE POSITIONED AS SHOWN IN DETAIL C.
 - 12) PRIOR TO FINISHING, ABRADE MATING SURFACES OF CROSSTUBE AND D5152-043 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH 'N' WIPE DEGREASER. INSTALL D5162-043 WITH LAYER OF PROSEAL 880 ON INSIDE CONCAVE SURFACE, 0.100" MIN THK LOCATE D5162-043 USING TOOL DT10112.
 - 13) LOCATE D5162-043 USING TOOL DT10112.
 - 14) INSTALL THE D5151-1 GROUNDING CLAMP AND ASSOCIATED HARDWARE PER DETAIL "C" PRIOR TO FINISHING. TORQUE THE MS21042-3 NUT 12-15 IN-LB. COMPLETELY SEAL THE EDGES OF THE CLAMP USING PROSEAL 880.
 - 15) CARRY OUT A RESISTANCE CHECK BETWEEN THE D5151-1 GROUNDING CLAMP AND ANY UNPAINTED SECTION OF THE CROSSTUBE IN ACCORDANCE WITH AC43-13-1B CHAPTER 11. MAXIMUM RESISTANCE IS 3 MILLIOHMS.

REV.	DESCRIPTION	DATE
A	NEW ISSUE	14.08.07
B	ORIENTATION OF D5122-1 CENTER SUPPORT WAS CORRECTED. D5123-3 ADDED UNDER D5138-1/2 CONTACT PADS. ADDED D5134-041/042 DAMPER SUPPORTS TO DETAIL C. ADDED D5151-1 GROUNDING CLAMP AND ASSOCIATED HARDWARE TO DETAIL C. FOR LOCATING CUFF HOLES. RE-ORGANIZED NOTES, REMOVED REDUNDANT INFORMATION.	14.08.08
C	ORIENTATION OF D5122-1 CENTER SUPPORT WAS CORRECTED. D5123-3 ADDED UNDER D5138-1/2 CONTACT PADS. ADDED D5134-041/042 DAMPER SUPPORTS TO DETAIL C. ADDED D5151-1 GROUNDING CLAMP AND ASSOCIATED HARDWARE TO DETAIL C. FOR LOCATING CUFF HOLES. RE-ORGANIZED NOTES, REMOVED REDUNDANT INFORMATION.	14.10.23
D	ADD D5150-3 STEP POST (2X). MOVED INSPECTION WINDOW DETAIL TO SHIT 1. MODIFIED NOTES ON SH 1 & 3	14.11.26
E	D5152-043 WAS D5156-3. SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER	15.01.16
F	REMOVED PRIMERPAINT ON CUFFS. 2.518 WAS 2.500 (IC4-5)	15.02.03
G	FINISHING ORDER ADJUSTED. UPDATE BEND TOLERANCE AND TRN DETAIL. TOLERANCE TO MATCH D119-798-141 DWG	15.04.24
H	NOTE 9 RE-WRITTEN. BONDING INSTRUCTIONS MOVED TO IN. SEE PREVIOUS REV FOR DETAILS	15.10.13
I	D5123-3 MATERIAL CHANGED FROM D5138-1/2 & D5134-041/042 TO D5138-1/2 & D5134-041/042	15.10.13
J	ADD NOTE 14 & 16 ON SHIT 1. ADD PAINT/PRIMER MASKING LOCATIONS. REVISE NOTES ON SHIT 1 & 4. ADD NOTE 15 ON SHIT 2 TO ADD GROUNDING CLAMP AND ASSOCIATED HARDWARE. REF PART 17-380	17.02.10
K	CHANGE LOCATION AND ORIENTATION OF D5151-1 GROUNDING CLAMP. REF CAR 18-222	18.09.19

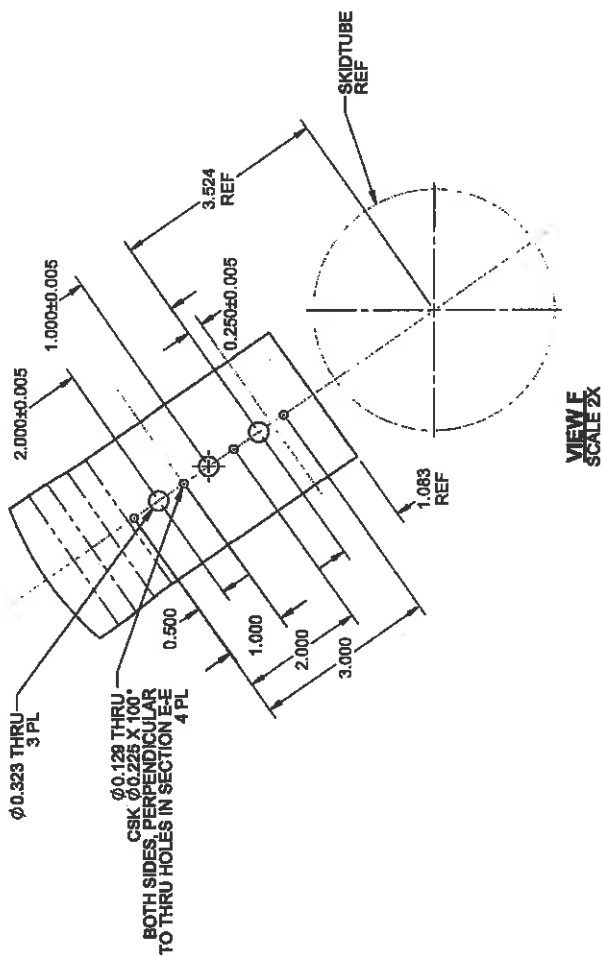
UNDER REVIEW
URF 19-798 18.07.04 (SAD)

RELEASED

2019 MAY 07 04
EON M-75

APPROVED

DESIGN	AP	DESCRIPTION	DART AEROSPACE LTD
DRAWN	MW	DRAWING NO.	HAWKESBURY, ONTARIO, CANADA
CHECKED	ZF	D119-798-241	
MFG. APPR.	JPS	TITLE	XTUBE ASSY (AW119 MKII AFT)
APPROVED	NO	SHEET 1 OF 7	REV. K
DE APPR.	CP	SCALE	NTS
DATE	18.09.19		



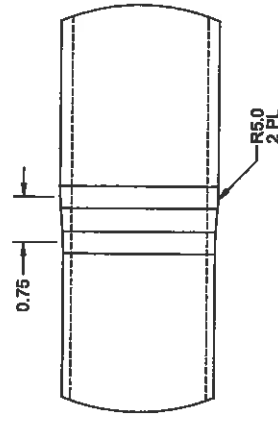
UNDER REVIEW
URF 19-798 19.07.04 (SAD)

RELEASED

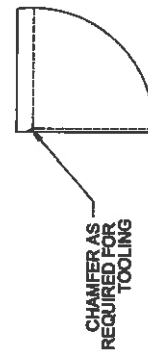
2019 MAY 07 

DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D119-798-241 SHEET 6 OF 7 REV. K SCALE NTS XTUBE ASSY (AW119 NKII AFT) COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT AND ALL INFORMATION HEREON IS UNCLASSIFIED UNLESS INDICATED OTHERWISE BY THE CLASSIFICATION
DRAWN	MW	
CHECKED	ZF	
WFG. APPR.	JFS	
APPROVED	NO	
DE APPR.	CP	
DATE	18.09.19	TITLE

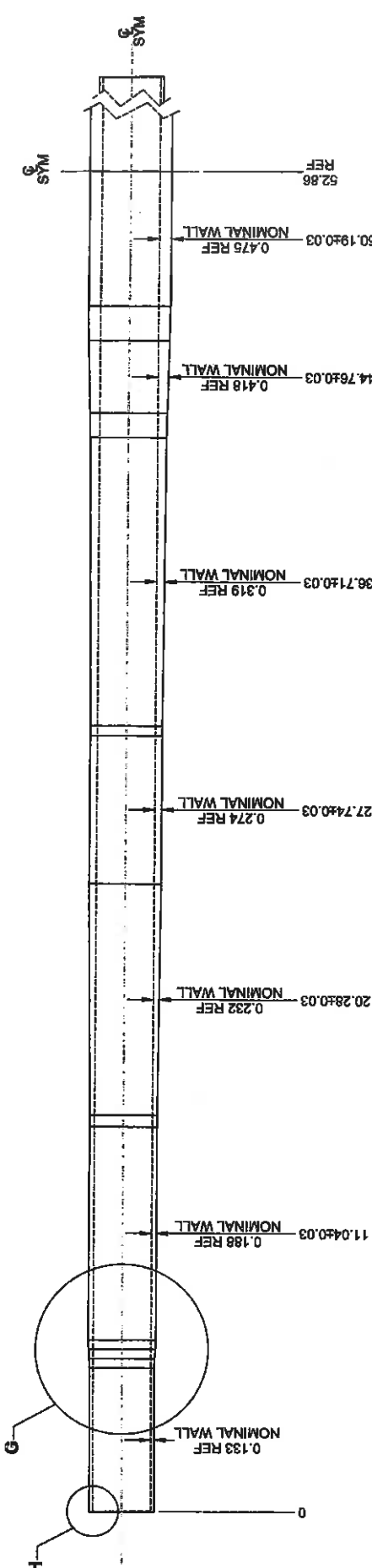
1 2 3 4 5 6 7



DETAIL G
SCALE 2X



DETAIL H
SCALE 4X



UNDER REVIEW
URF 19-799 18.07.04 (SAD)

D119-796-241 TRN CROSSTUBE, AFT
SUPPLEMENTAL VIEW: NOMINAL WALL THICKNESS

RELEASED
2019 MAY 07

DESIGN	AP	MW	ZF	JFS	NO	CP	DATE	18.09.19
DRAWN								
CHECKED								
MFG. APPR.								
APPROVED								
DE APPR.								

APPROVED

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D119-796-241

REV. K

SHEET 7 OF 7

TITLE XTUBE ASSY (AW119 MKII AFT)

SCALE NTS

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Entered: _____ Date: _____

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

DISPOSITION		DEPARTMENT/PROCESS			
Job: _____	Rework ☐ Scrap ☐ Use-as-is ☐	Skid-tube ☐ Machining ☐ Large Fab ☐	Cross tube ☐ Small Fab ☐ Finishing ☐	Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐	Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐
Date: _____	Sequence #: _____	QTY Affected: _____		MRB (QS1042) _____	
Description Work Order Deviation		Disposition			
Root Cause		FAULT CATEGORY			
Operator ☐	Pressure/Forced ☐	Contamination ☐	Power Loss/Surge ☐	Positioned Wrong ☐	
Manufacturing Process ☐	Bending ☐	Misaligned/off center ☐	Folio/Program ☐	Outside Tolerance ☐	
Equip/Tooling ☐	Crushing ☐	BOM/Route ☐	Grain Direction ☐	Drawing ☐	
Handling/Preservation ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Finish ☐	
Material ☐	Crimp/Kink/Ripple/Wave/Twist ☐	Incomplete/Unclear Instructions ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	
Product Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Out of Sequence ☐	Misread ☐	
Process Improvement ☐	Mislabeled ☐	Fit/Function ☐	Off-set/Set-up ☐		
Human Factors ☐	Other/Details: _____				
Completed By _____		Lead hand / Supervisor _____			
QC / QA Coordinator _____					